UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/601,686	06/23/2003	Robert P. Loce	D/A3092	7702

		EXAMINER
25453 7590 03/16/2007		ZHENG, JACKY X
PATENT DOCUMENTATION CENTER		
XEROX CORPORATION	ART UNIT	PAPER NUMBER
100 CLINTON AVE., SOUTH, XEROX SQUARE, 20TH FLOOR		
ROCHESTER, NY 14644	2625	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/16/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

PTOL-90A (Rev. 10/06)

	Application No.	Applicant(s)
Office Action Summary	10/601,686	LOCE ET AL.
	Examiner	Art Unit	
	Jacky X. Zheng	2625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on *June 23, 2003*.

2a) ☐ This action is **FINAL**.   2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *1-18* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) *1-18* is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☒ The drawing(s) filed on *June 23, 2003* is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☐ All   b) ☐ Some * c) ☐ None of:

      1. ☐ Certified copies of the priority documents have been received.

      2. ☐ Certified copies of the priority documents have been received in Application No. _____.

      3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date *6/23/03*.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

1.   This is the initial office action based on the application filed on June 23, 2003.

Information Disclosure Statement

2.   The information disclosure statement (IDS) submitted on June 23, 2003 was filed on the

mailing date of the application on June 23, 2003. The submission is in compliance with the

provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being

considered by the examiner.

Claim Rejections - 35 USC § 112

3.   The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the
> subject matter which the applicant regards as his invention.

4.   **Claims 1-18** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for

failing to particularly point out and distinctly claim the subject matter which applicant regards as

the invention.

5.   The term "substantially" in Claims 1, 10 and 17-18 is a relative term which renders the

claim indefinite. The term "substantially" is not defined by the claim, the specification does not

provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would

not be reasonably apprised of the scope of the invention. This also affects the dependent Claims

2-9 and 11-16.

6.   Claims 1 and 17 also recites the limitations of "setting the pixel values of edge pixels in

the image object to be substantially the same value", it is unclear which value(s) is being

compared with "the pixel of edge pixels" to be "substantially the same value" according to the

claim language. This also affects the dependent Claims 2-9.

Claim Rejections - 35 USC § 102

7.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8.   **Claims 1, 8 and 17** are rejected under 35 U.S.C. 102(b) as being anticipated by **Zeck et al. (U.S. Patent 6,020,979)**.

With regard to claim 1, the claim is drawn to a method in a system for processing document images for antialiasing at least one input image to provide an antialiased image, comprising the steps of: receiving the input image; processing said received input image by operation of an <u>antialiasing filter</u> to create an antialiased image *(See Zeck et al. Column 2, lines 57-58)*, the antialiasing filter operation including the steps of: (1) <u>determining one or more regions</u> within the received image, *(See Zeck et al. Column 2, lines 52-53 & 55-56)* (2) upon detecting at least one region containing a background image level that adjoins an image object having pixel values in a range other than a predetermined range of limit values, setting the pixel values of edge pixels in the image object to be substantially the same value; and outputting the antialiased image *(See Zeck et al. Column 2, lines 58-67)*.

With regard to claim 8, the claim is drawn to the method of claim 1, wherein the received image is provided in the form of a page description language *(See Zeck et al., Figure 3 and column 4, lines 7-18)*.

With regard to claim 17, the claim is drawn to an apparatus in a system for processing document images for antialiasing at least one input image to provide an antialiased image,

comprising an image processing unit operable for receiving the input image and for processing

said received input image by operation of an antialiasing filter to create an antialiased image *(See*

Zeck et al. Column 2, lines 57-58), the antialiasing filter being operable to: (1) select at least one

of a logical filter operation and an averaging filter operation, said selection being determined

according the pixel level of one or more pixels in an image object present in the received input

image *(See Zeck et al. Column 2, lines 52-53 & 55-56)*; (2) apply the selected filter operation to

the image object to produce the antialiased image, whereby the image object in the antialiased

image exhibits edge pixel values that are substantially uniform around the image object, and

output the antialiased image *(See Zeck et al. Column 2, lines 58-67)*.

Claim Rejections - 35 USC § 103

9.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
> section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are
> such that the subject matter as a whole would have been obvious at the time the invention was made to a person
> having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the
> manner in which the invention was made.

10.   **Claims 1-18** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Zeck et al.**

(U.S. 6,020,979) as applied to claims 1, 8 and 17 above, and further in views of **Loce et al. (U.S.**

Patent No. 6,243,499) and **Kumazaki et al. (U.S. Patent No. 5,555,360)**.

        With regard to claims 1-9, Zeck et al. disclose the limitations (as claimed in Claim 1) of

receiving the regions of the image document, and applying the "antialiasing filter" to the regions,

and replace the pixels at near the edges with "gray level pixels having M levels" to yield a

corrected image *(See Zeck et al., lines i.e. 52-65, Claim 1;)*; Zeck et al. also disclose the

limitation of the inputted image is provided in the form of page description language (PDL) *(See i.e. Figure 3, Column 4, lines 7-18).*

Zeck et al. do not *explicitly* disclose the limitations of examining "an observation window of neighboring pixel at a target location (as claimed in Claim 2)", the received digital image further comprise "super resolution pixels (as claimed in Claim 3)", utilizing the "order-statistic filter (as claimed in Claim 4)", forming an address based on counting the similar values within the observation window and used for indexing a table of values to determine the pixel value of the edge pixel (as claimed in Claim 5), the pixel resolution of the received image is <u>at or above</u> a value that is integer multiple of the pixel resolution of the antialiased image (as claimed in Claim 6), receiving a tag identifying the one or more pixels selected to be processed by the antialiasing filter (as claimed in Claim 7), and setting the gray value of the edges of the image object by inserting a page description language (PDL) object into the output antialiased image.

However, Loce et al. disclose the limitations of "an observation window of neighboring pixel at a target location" *(See Loce et al., column 8, lines 11-12);* the received digital image further comprise "super resolution pixels" *(See column 2, lines 37-40, "capturing the image at a resolution greater than the final or desired output resolution"); utilizing* the operation of "order-statistic filter" *(See column 7, lines 37-39, "logic operation");* forming an address based on counting the similar values within the observation window and used for indexing a table of values to determine the pixel value of the edge pixel *(See column 7, lines 10-14, disclose "look-up table", column 8, lines 50-51, discloses "pixel count");* the pixel resolution of the received image is <u>at or above</u> a value that is integer multiple of the pixel resolution of the antialiased image *(See column 2, lines 37-40, disclose the resolution of image being captured or inputted is*

greater than the final or desired output resolution, by sub-sampling;); receiving a tag identifying

the one or more pixels selected to be processed by the antialiasing filter *(See column 10, line 60*

– column 11, line 15, disclose the processing of tagging the pixels at the border).;

Therefore it would have been obvious to one of ordinary skill in the art at the time of

invention to have modified Zeck et al. to include the abovementioned limitations disclosed and

taught by Loce et al. It would have been obvious to one of ordinary skill in the art at the time of

invention to have modified Zeck et al. by the teachings of Loce et al. to include the limitations

mentioned previously taught by Loce et al. *for "reduction or elimination of jaggies on the edges*

of lines and polygons, including text" (See Loce et al., column 1, lines 47-48).

Zeck et al. and Loce et al. do not *explicitly* disclose the limitation of setting the gray

value of the edges of the image object by inserting a page description language (PDL) object into

the output antialiased image.

However, Kumazaki et al. disclose the limitations of "carries out an antialiasing of image

information of the PDL language for each single page supplied from the host computer…" *(See*

Kumazaki et al., i.e. column 9, lines 47-51).

Therefore it would have been obvious to one of ordinary skill in the art at the time of

invention to have modified the teachings of Zeck et al. and Loce et al. to include the limitation of

setting the gray value of the edges of the image object by inserting a page description language

(PDL) object into the output antialiased image taught by Kumazaki et al.. It would have been

obvious to one of ordinary skill in the art at the time of invention to have modified the teachings

of Zeck et al. and Loce et al. by the teachings of Kumazaki et al. to include the limitation of

setting the gray value of the edges of the image object by inserting a page description language

(PDL) object into the output antialiased image taught by <u>Kumazaki et al.</u> *to perform correction of the input source-image data which is originally in form of PDL for yielding an antialiased output image.*

With regard to claims 10, the claim is drawn to the identical limitations recited in Claim 1 mentioned previously, and further drawn to the limitations of utilizing at least one of the "logical filter operation" and "averaging filter operation" *(Claim 10 is rejected under the identical grounds set forth above, and additionally, i.e. see <u>Loce et al.</u>, column 7, lines 37-38, disclosing "the logic operation", and column 2, line 40, disclose "averaging process").*

With regard to claims 11-16, the claims are drawn to the method of claim 10, further having the identical limitations recited in claims 2-8 and 10 above *(Claims are rejected for the same reasons above. See the detailed discussions of the claims above).*

With regard to claim 17, the claim is drawn to a apparatus for antialiasing comprising the identical limitations recited in claim 1 above *(Claim is rejected for the same reasons above. See the detailed discussions of the claim 1 above).*

With regard to claim 18, the claim is drawn to a apparatus for antialiasing comprising the identical limitations recited in claim 10 above *(Claim is rejected for the same reasons above. See the detailed discussions of the claim 10 above).*

Conclusion

11.   The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

A. Le (U.S. Patent No. 6,608,942) discloses a method for smoothing jagged edges in digital images.

B. Mayer (U.S. Patent No. 5,185,852) discloses an invention relates to antialiasing apparatus and method for computer printers.

C. Yamamoto (U.S. Patent No. 2002/0110274) discloses an invention relates to antialiasing depending on the luminance of an image (e.g. luminance of an edge portion).

D. Sato et al. (U.S. Patent No. 5,697,712) disclose a method and apparatus processes a dot image by observing an observation dot and dots surrounding the observation dots for changing the density level, for reducing the jagged edges.

E. Jayant et al. (U.S. Patent No. 7,166,067) disclose an invention relates to adaptive edge diction and enhancement for image processing.

F. Loce (U.S. Patent No. 6,757,449 – Xerox Corp.) disclose a method and system for processing antialiased images.

G. Loce et al. (U.S. Patent No. 6,167,166) disclose a method to enable the recognition and rendering of antialiased images.
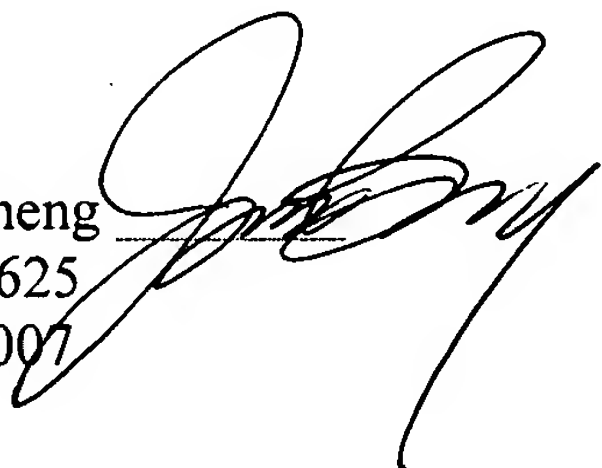

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jacky X. Zheng whose telephone number is (571) 270-1122. The examiner can *normally* be reached on Monday-Friday, 7:30 a.m.-5p.m., Alt. Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Twyler M. Lamb can be reached on (571) 272-7406. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

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like assistance from a USPTO Customer Service Representative or access to the automated

information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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March 6, 2007

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